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Introduction

Theory and typology of the word*

T. A. HALL, KRISTINE A. HILDEBRANDT, AND BALTHASAR BICKEL

1. Introduction

This special issue is a collection of seven papers dealing with the theory and typology of the *word*. In Section 2 we discuss various theoretical issues and typological generalizations involving *grammatical words* and *phonological words*. Section 3 provides a brief summary of the main ideas contained in the seven articles and shows how they relate to the general topics discussed in Section 2. Section 4 points to future areas of research.

2. Topics underlying the special issue

Most linguists now recognize the existence of both the *grammatical word* and the *phonological word* (or *prosodic word*). Countless studies have shown that within a single language, these two constituents do not always match. For example, many languages are attested in which a single grammatical word consists of two or more phonological words (e.g., each part of a compound word or both the prefix and following stem). In other languages a phonological word has been argued to consist of two grammatical words (e.g., in a sequence of lexical word+clitic). In this section we review briefly the two types of “words”.

The phonological word is a prosodic unit which defines the domain for various generalizations, e.g., the domain for phonological rules, phonotactic conditions and minimality constraints. Some of the literature dealing with the phonological word includes Dixon (1977a, 1977b), Nespor and Vogel (1986), Peperkamp (1997), Hall and Kleinhenz (1999) and Dixon and Aikhenvald (2002). The phonological word is one of several constituents in the Prosodic Hierarchy, which is depicted in the first column of (1).¹ The phonological word in this tradition is a prosodic constituent situated between the foot and the phonological phrase. We comment below on the mapping procedure referred to in the final column.

(1) The constituents of the prosodic hierarchy:

Constituent:	Mapping:
phonological utterance	} syntactic structure
intonational phrase	
phonological phrase	
phonological word	morphosyntactic structure
foot	} phonological information
syllable	

While the syllable and foot are usually assumed to be mapped to strings of segments on the basis of phonological information alone, the phonological word is often seen as “the lowest constituent of the prosodic hierarchy which is constructed on the basis of mapping rules that make substantial use of nonphonological notions” (Nespor and Vogel 1986: 107). This statement is intended to mean that in any given language the phonological word (as opposed to the syllable and the foot) consistently correlates with morphological boundaries. Thus, phonological words are assigned to the segments in a language on the basis of an algorithm (or Optimality-Theoretic (OT) alignment constraints) which takes morphosyntactic structure as the input. In the present issue the formal mechanism whereby strings of segments are parsed into phonological words is discussed by Trommer (for Hungarian).

At the heart of the Prosodic Hierarchy is the Strict Layer Hypothesis, which stipulates that a constituent n is immediately dominated by a single constituent of rank $n + 1$. More recent work has shown that the Strict Layer Hypothesis should be decomposed into a series of four separate OT constraints (i.e., *LAYEREDNESS*, *HEADEDNESS*, *NONRECURSIVITY*, *EXHAUSTIVITY*; see Selkirk 1995, Booij 1996, Peperkamp 1996, 1997), two of which have been argued to be violable (i.e., *NONRECURSIVITY*, *EXHAUSTIVITY*) and two nonviolable (i.e., *LAYEREDNESS*, *HEADEDNESS*).

One open question is whether or not the six prosodic domains in (1) are the only ones, or if the Prosodic Hierarchy should be enriched with additional constituents. Along these lines, some linguists have proposed the clitic group, which intervenes between the phonological word and the phonological phrase (e.g., Nespor and Vogel 1986).² Several linguists have argued that certain prosodic constituents are recursive (e.g., Selkirk 1995 for the recursivity of the phonological word). The consequences of recursivity of constituents of the hierarchy are potentially important because they raise the issue of non-isomorphism of prosodic domains. Despite such analytical implications, documented examples of recursive domains include the Neapolitan dialect of Italian, with recursive stress application (Peperkamp 1996), Limbu (Tibeto-Burman) with multiple,

(but crucially, *nonaligning*) word domains referenced by different phonological processes and constraints (Hildebrandt 2007), and Luganda (Niger-Congo) with different word-level domains for stress and tone alternations (Hyman et al. 1987). The issue of recursivity is dealt with in the present issue by Green.

The assumption of universal (phonological) words in general and the predictions made by the Prosodic Hierarchy in particular have also fuelled research on the typological distribution of word domains and the ways that words align with other constituents of the hierarchy (cf. Dixon and Aikhenvald 2002; Bickel and Hildebrandt 2005; Bickel et al. 2007a, 2007b). Several contributions to the present issue consider words in crosslinguistic perspective, e.g., Hyman (with a family-internal survey), Inkelas (with evidence for the formal distinction between phonological duplication and morphological doubling via the crosslinguistic properties of reduplications), and Hall and Hildebrandt (with an observation of prosodically noncohering suffixes and compounds as one phonological word in Kyirong Tibetan, properties assumed to be crosslinguistically infrequent).

In addition to the phonological word, the grammatical word has been argued to be a domain for morphosyntactic (and to some extent, semantic) generalizations (Dixon and Aikhenvald 2002). Several contributions in the present issue address the notion of grammatical words. These studies illustrate the relevance of this unit in both concatenative languages (see Hyman and Tuttle on Bantu and Athabascan respectively), as well as fusional languages (see Hohenberger sign languages). By highlighting the different nature of morphological and prosodic asymmetries, and also the fundamental differences between processes for phonological vs. morphological functions, some of these contributions also underscore the inherent non-isomorphism of prosodic domains to grammatical ones (i.e., that prosodic domains are not essentially identical to grammatical ones, and thus reaffirming the need for a prosodic hierarchy model to deal with phonology at “larger levels”).

3. Contributors to this issue

3.1. *Rule domains in Irish (Green)*

Antony D. Green argues that various phonological processes of Irish have the recursive phonological word as their domain. According to the first process (lenition) the coronals /t d s/ become [h ɣ h] under certain morphosyntactic conditions. Lenition is blocked (i.e., /t d s/ remain unchanged) after other coronal consonants, a phenomenon Green refers to

as coronal blocking. In a subset of coronal blocking domains /s/ changes to [t] rather than remaining [s] (s-Fortition).

Green shows that the domain of coronal blocking and s-Fortition is the (recursive) phonological word, as these two processes are found in right-headed as well as left-headed compounds, but not in other (noncompound) left-headed complex NPs. An optimality-theoretic analysis is proposed which reveals that coronal blocking and s-fortition are motivated by the same constraint ranking: the phonological requirement that coronal consonants be followed by other coronal consonants is more important than the selection of the morphologically correct mutation grade of a word.

3.2. *The word in Kyirong Tibetan (Hall and Hildebrandt)*

T. A. Hall and Kristine A. Hildebrandt examine evidence for the syllable and especially the phonological word in the Kyirong dialect of Tibetan. The evidence comes from a number of segmental and constraints governing the distribution of long vowels, aspirated consonants and contour tones. The phonological word (pword) domain is significant because it requires three distinct representations for suffix-stem combinations, depending on the particular suffix involved: (a) the stem and suffix form one pword, (b) the suffix lies outside of the pword of the stem and is attached to a higher prosodic constituent, and (c) the stem and suffix are separate pwords. In addition, Hall and Hildebrandt argue that one phonological process operates at the left edge of a morphological domain, i.e., the “stem”.

While the parsings in (a)–(c) above are attested in many other the languages of the world, Kyirong Tibetan is unusual typologically because all but one of the stem plus suffix combinations is either (b) or (c). By contrast, in many other languages stem plus suffix sequences are typically represented as in (a). Kyirong Tibetan will also be argued to be unusual typologically because it treats both parts of compounds as single pwords and not as two separate pwords, which is probably the default option crosslinguistically. See also Hildebrandt (2007), who shows that compounds are separate pwords in the genetically related language Limbu.

3.3. *The word in sign language (Hohenberger)*

Annette Hohenberger’s article provides an overview of the major diagnostics of words (both phonological and grammatical) in sign languages, with evidence from both production and processing research. Generalizations

about processes (e.g., deletion, epenthesis, morpheme coalescence) and also minimality/maximality constraints (e.g., the strong preference for monosyllabicity) may be made at the level of the phonological word in sign languages. Given the strong tendency towards monosyllabicity, phonological words are best appreciated along a vertical dimension or axis, with simultaneous articulatory interaction at multiple levels. With respect to monosyllabicity, sign languages raise interesting questions about recursivity of syllable-phonological word domains and also about cognitive motivations behind such strong minimality preferences.

Grammatical words in sign languages are a topic of considerable debate, due to their iconic, yet conventionalized nature. Similarly to phonological words, grammatical words convey more information along a vertical dimension, with words aligning along more fusional than concatenative morphological parameters. Evidence from processing and slips-of-the-hand studies reveal the hybrid properties of particular grammatical word structures (e.g., classifier constructions and classifier predicates), highlighting their simultaneous lexical and phrasal properties.

3.4. *Asymmetries in Bantu (Hyman)*

Larry M. Hyman's contribution re-examines a number of well-known phonological and morphological asymmetries in Bantu morphology and phonology. These observations may be classed overall as types of "left-right" asymmetries, with subtypes found in morphological tendencies (e.g., the suffixes vs. prefixes debate), as well as word-level phonological tendencies (e.g., anticipatory vs. perseverative alternations; stronger post-positional vs. pre-positional phonological cohesion; stronger prepositional vs. post-positional saliency or independence). While these asymmetries have been well attested in other literature and dealt with in the form of universalist-type proposals, a look at them under one thematic umbrella as "asymmetries" brings to light potentially conflicting assumptions.

For example, is it really the case crosslinguistically that prefixes are excluded from otherwise word-level generalizations, and how does this prediction reconcile with apparent conflicting observations that prefixes are more likely to be diachronically lost via absorption into the root/stem? And is it really the case that suffixes are more prosodically cohering, but simultaneously less likely to be lost via absorption? And why is it that tone-related processes stand counter (in their largely perseverative properties) to other types of processes? And how does this "noncohering" notion of prefixes reconcile itself with a general assumption of (stem-)initial edge marking and saliency in psycholinguistic traditions?

While Hyman underscores the importance of crosslinguistic studies (e.g., Bybee et al. 1991) to better reveal the distribution of the morphological and phonological properties of prefixes and suffixes, his approach here is different than Bybee et al., where, he here undertakes an inspection of Bantu languages, which are both prefixing and suffixing, and which evidence great diversity in prosodic organization.

Hyman's survey of Central and Northwest Bantu languages reveals that the former group of languages tend to have processes/patterns indicating larger levels of coherence (e.g., minimality conditions, phrasal phenomena, prefix-stem cohesion), while the latter group have patterns indicating lesser or smaller levels of coherence, or patterns that highlight the prosodic saliency of the stem word to the exclusion of other morphological domains (e.g., maximality conditions, prosodic prefix independence from the stem, or else prefix coherence with elements other than the stem from which it is subcategorized, stem-initial strengthening). The consequence of such patterns is that the notion of phonological word in these languages is really more appropriately a notion of "prosodic stem", and as such, "word-initial" salience in Bantu is more properly viewed as "stem-initial" salience. However, this tendency is much more so for Northwest Bantu languages than for Eastern Bantu.

3.5. *Dual theory of reduplication (Inkelas)*

Sharon Inkelas argues that the fundamental typological distinction pertaining to reduplication is that between phonological duplication and morphological doubling. She refers to her approach as the Dual Theory of reduplication. Phonological duplication refers to doubling for a phonological reason, e.g., in providing an onset or nucleus for a syllable or filling in the featural content of an otherwise unspecified timing unit in the representation. This type of duplication is formally related to phonological assimilation, modeled in the Dual Theory via the mechanism of string-internal correspondence. It obeys phonological locality conditions, targets phonologically defined constituents, and is sensitive to phonological markedness considerations. By contrast, morphological doubling occurs for a morphological reason, e.g., in marking a change in meaning or creating a new stem type. This type of duplication is the result of the doubling of a morphological category such as root, stem, or affix. Morphological doubling, modeled via the "double insertion" mechanism of Morphological Doubling Theory (Inkelas and Zoll 2005), is not derived by phonological correspondence and therefore is not subject to any of the phonological properties characteristic of phonological

duplication; the two copies, related morphosemantically, are phonologically independent.

3.6. *The phonological word in Hungarian (Trommer)*

Jochen Trommer proposes a new algorithm for the phonological word in Hungarian. Basing his analysis on the differences between so-called “postpositions” and “case suffixes”, he shows that both types of adpositional elements belong to the same morphosyntactic category, and that the phonological word status depends not on an arbitrary division between affixes and syntactically free items, but on phonological properties of the respective adpositions. Specifically, bisyllabic adpositions are argued to form phonological words on their own, while monosyllabic adpositions are shown to be integrated into the phonological word of their lexical head. Generalizing this result, Trommer argues that all functional elements of Hungarian traditionally called “inflectional affixes” are syntactically independent functional heads integrated into the phonological word of a preceding lexical head because they are prosodically subminimal. Trommer also shows that inflectional affixes which appear to be bisyllabic must either be decomposed into different markers or must be underlyingly monosyllabic. He ultimately proposes a ranking of optimality-theoretic alignment constraints implementing the construction algorithm for the phonological word in formal detail.

3.7. *The word in Ahtna Athabaskan (Tuttle)*

Siri G. Tuttle examines of the notion of wordhood in Ahtna Athabaskan, where traditional approaches have in some cases blurred grammatical boundaries with phonological ones, and where in some cases it is the assumption that the structural equivalent of an English sentence is represented as a single word in Ahtna. As such, a nontrivial question is whether Ahtna has a phonological word within syntactic-level groupings, and whether the relevant diagnostics for phonological words as such must come from only lexical (contrastive) as opposed to postlexical (subcontrastive) phenomena. Tuttle argues that there is evidence for the phonological word in Ahtna, although the bulk of this evidence comes in the shape of subphonemic patterns (mainly microscale durational differences at constituent edges vs. medially). Interestingly, what positive evidence for wordhood there is in Ahtna, highlights the stem (a morphological category) as prosodically prominent, to the exclusion of other

morphologically bound material (e.g., prefixes and suffixes). Such a prosodic singling out of the morphological stem has been noted in other languages (e.g., in Bantu languages, cf. Downing 1999).

One observation which emerges from Tuttle's analysis is that prefixes are prosodically nonintegrating to the stem word in Ahtna, and are overall prosodically nonprominent in their own right. On the one hand, this is not in itself surprising, as, crosslinguistically, prefixes are often unlicensed at the level of the phonological word. On the other hand, the observation of non-prominence of prefixes is interesting, as this implies that there is also no initial or left-edge prominence for the (verb) word in Ahtna. Rather, the edge prominence comes at the stem level, which is morphologically and syntactically at the center of the constituent. This raises the question by Tuttle as to how speakers know about word-boundary delimitations, given the prefixes are prosodically non-prominent. Tuttle turns to morphology as a potential solution, suggesting that since there few suffixes in Ahtna, they are morphologically prominent, and signal the imminent end of the constituent (i.e., they mark an upcoming boundary).

Another consequence of Tuttle's analysis is that there may be languages where a strict adherence to lexical/contrastive evidence may leave one without sufficient evidence for word-level prosodic organization. As such, a division of evidence into structure-preserving vs. non-structure-preserving (*a la* Mohanan 1986) may leave out potentially important language types.

4. Concluding remarks

The articles in the present issue represent a diversity of responses to the multiple challenges and research avenues presented by the phonological word in its relation to other domains, both prosodic and grammatical. Such challenges and future paths would include languages which lack any positive evidence for phonological words (cf. Thompson 1963 and Bickel et al. 2007b on the lack of phonological words in Vietnamese), continued crosslinguistic explorations on diagnostics for wordhood and the prosodic-morphological mismappings that they highlight, and a return to the notion of prosodic stems, to name just a few of possibilities. As such, we anticipate this special issue to be of relevance to scholars seeking language-specific analyses, vs. crosslinguistic or theoretical implications.

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Notes

- * Earlier versions of several of the articles in this special issue were presented at the “Workshop on the Word Domains: Typology and Theory” [co-organized by Balthasar Bickel, T. A. Hall and Kristine Hildebrandt] at the University of Leipzig in April, 2004. This conference was made possible by support from the research project on the Theory and Typology of Words funded by the Deutsche Forschungsgemeinschaft (DFG BI 799/2 and BI 799/2-3). We wish to thank the anonymous reviewers of the articles in this special issue and the editorial support at *Linguistics*. Correspondence address: T. A. Hall: Department of Germanic Studies, Ballantine Hall 644, Indiana University, 120 Kirkwood Avenue, Bloomington, Indiana 47405-7103. E-mail: tahall2@indiana.edu.
1. Most current studies assume that the lowest constituent in the Prosodic Hierarchy is the mora, which is not depicted in (1).
 2. Linguists who have argued convincingly against the clitic group include Booij (1996) and Peperkamp (1997, 1999).

References

- Bickel, Balthasar and Hildebrandt, Kristine A. (2005). Diversity in phonological word domains. Paper presented at the 6th Biannual Conference of the Association for Linguistic Typology, Padang, July 24, 2007.
- Bickel, Balthasar; Hildebrandt, Kristine; and Schiering, René (2007a). Cluster analysis of phonological word domains. Paper presented at the 29th Annual Meeting of the German Linguistics Society, Siegen, March 1, 2007.
- (2007b). Are there universal principles determining phonological word size? Paper presented at the 7th Biannual Conference of the Association for Linguistic Typology, Paris, September 26, 2007.
- Booij, Geert (1996). Cliticization as prosodic integration: the case of Dutch. *The Linguistic Review* 13, 219–242.
- Bybee, Joan; Pagliuca, William; and Perkins, Revere D. (1991). On the asymmetries in the affixation of grammatical material. In *Studies in Typology and Diachrony*, William Croft, Keith Denning, and Suzanne Kemmer (eds.), 1–42. Amsterdam: Benjamins.
- Dixon, R. M. W. (1977a). *A Grammar of Yidiny*. Cambridge: Cambridge University Press.
- (1977b). Some phonological rules of Yidiny. *Linguistic Inquiry* 8, 1–34.
- Dixon, R. M. W. and Aikhenvald, Alexandra Y. (eds.) (2002). *Word: A Cross-Linguistic Typology*. Cambridge: Cambridge University Press.
- Downing, Laura (1999). Prosodic stem ≠ prosodic word in Bantu. In *Studies on the Phonological Word*, T. A. Hall and Ursula Kleinhenz (eds.), 73–98. Current Issues in Linguistic Theory 174. Amsterdam: John Benjamins.
- Hall, T. A. and Kleinhenz, Ursula (eds.) (1999). *Studies on the Phonological Word*. Current Issues in Linguistic Theory 174. Amsterdam: John Benjamins.
- Hildebrandt, Kristine A. (2007). Prosodic and grammatical domains in Limbu. *Himalayan Linguistics Journal* 8, 1–34.
- Hyman, Larry M.; Katamba, Francis; and Walusimbi, Livingstone (1987). Luganda and the strict layer hypothesis. *Phonology Yearbook* 4, 87–108.
- Inkelas, Sharon and Zoll, Cheryl (2005). *Reduplication: Doubling in Morphology*. Cambridge University Press.

- Mohanan, K. P. (1986). *The Theory of Lexical Phonology*. Dordrecht and Lancaster: Reidel.
- Nespor, Marina and Vogel, Irene (1986). *Prosodic Phonology*. Dordrecht: Foris.
- Peperkamp, Sharon (1996). On the prosodic representation of clitics. In *Interfaces in Phonology*, Ursula Kleinhenz (ed.), 102–127. Berlin: Akademie Verlag.
- (1997). *Prosodic Words*. The Hague: Holland Academic Graphics.
- (1999). Prosodic words. *Glott International* 4, 15–16.
- Selkirk, Elisabeth (1995). The prosodic structure of function words. In *Papers in Optimality Theory*, J. N. Beckman, Laura Walsh Dickey, and Suzanne Urbanczyk (eds.), 439–469. Amherst: University of Massachusetts.
- Thompson, Laurence C. (1963). The problem of the word in Vietnamese. *Word* 19, 39–52.